

**CHAPTER 2: CONSTRUCTION, INSTALLATION, AND OPERATION OF BOILERS
AND UNFIRED PRESSURE VESSELS**

200 GENERAL PROVISIONS

- 200.1 Each steam boiler, except boilers which are exempted by Section 8 of the Boiler Inspection Act of June 25, 1936, shall bear the following information:
- (a) The A.S.M.E. symbol;
 - (b) The name of the manufacturer;
 - (c) The maximum allowable working pressure;
 - (d) The serial number;
 - (e) The year built; and
 - (f) Any other required data to indicate that it has been built in accordance with the A.S.M.E. Boiler and Pressure Vessel Code.
- 200.2 Each boiler, except Low Pressure Heating Boilers, shall bear a National Board Number to indicate that it has been inspected by an inspector holding a National Board Commission.
- 200.3 Each unfired pressure vessel operated at a pressure in excess of sixty (60) pounds per square inch and having a capacity in excess of fifteen (15) gallons, except vessels exempted by Section 8 of the Boiler Inspection Act of June 25, 1936, shall bear the following information:
- (a) The A.S.M.E. symbol;
 - (b) The name of the manufacturer;
 - (c) The maximum allowable working pressure;
 - (d) The serial number;
 - (e) The year built; and
 - (f) Any other required data to indicate that it has been built in accordance with the provisions of Section VIII of the A.S.M.E. Boiler and Pressure Vessel Code.

200 **GENERAL PROVISIONS** (Continued)

- 200.4 Each unfired pressure vessel as described in §200.3 shall also bear a National Board number to indicate that it has been inspected by an inspector holding a National Board Commission.

201 **PERMITS REQUIRED FOR INSTALLATION**

- 201.1 No person shall erect, install, re-erect, or reinstall or cause to be erected, installed, re-erected or reinstalled any steam boiler or unfired pressure vessel until he or she shall have made application on the form provided and obtained an installation permit; Provided, that nothing herein shall apply to steam boilers exempt under Section 8 of the Act and of unfired pressure vessels exempted under §103, except that hot-water storage tanks in single-family dwellings and flats shall be exempted.
- 201.2 Applications for permits shall be accompanied by a form known as "Manufacturer's Data Report," properly filled out and signed by an inspector licensed to insure Vessel Inspectors, showing that the boiler or unfired pressures vessel has been constructed and inspected in accordance with the requirements of the American Society of Mechanical Engineers Boiler and Unfired Pressure Vessel Code.
- 201.3 When an application is made to install a used boiler or unfired pressure vessel definite information shall be furnished showing that the boiler or unfired pressure vessel has been built in accordance with all the requirements of the A.S.M.E. Code and is so stamped.
- 201.4 Before an installation permit for a used boiler or unfired pressure vessel shall be issued, the boiler inspector shall carefully inspect the boiler or unfired pressure vessel in order to determine whether it is safe to operate, and any repairs or changes that may be necessary. The fee for that inspection shall be the same as called for under annual inspection.
- 201.5 Upon approval of the application and the accompanying data a permit for the installation, erection, reinstallation, or re-erection shall be issued by the Permit Branch, Licenses and Permit Division, after payment of the required fee to the D.C. Treasurer.
- 201.6 A schedule of fees shall be prescribed for installation permits and the annual inspections of boilers and unfired pressure vessels and may be obtained at the Permit Branch, Licenses and Permit Division.

201 PERMITS REQUIRED FOR INSTALLATION (Continued)

- 201.7 There shall be no additional fee required for the initial inspection; Provided, that where more than two inspector's visits are required, each additional inspection may be charged for at the same fee as prescribed under Annual Inspection Fees. The issuance of the certificate of inspection is included in these fees.
- 201.8 The fee for an inspection made on a Sunday, legal holiday or for other than regular working hours, shall be twice the normal fees prescribed.
- 201.9 When notification has been given to prepare a boiler or unfired pressure vessel for inspection or hydrostatic test on a definite date, or when a definite appointment for an inspection cannot be made by reason of the boiler or unfired pressure vessel not being properly prepared for inspection, so that an additional call or calls are thereby made necessary; or when additional inspections are required in order to secure compliance with orders previously issued, each additional call or inspection may be charged for at the same fee as prescribed under Annual Inspection Fees.
- 201.10 For an inspection made upon request or to determine the safety of an object not regularly inspected, the fee shall be as prescribed under Annual Inspection Fees.
- 201.11 For the inspection of a boiler being retubed in a shop, the fee shall be the same as for the annual inspection.
- 201.12 For an inspection to determine whether the condition of a boiler or unfired pressure vessel is such that it can be installed in the District, the fee shall be the same as prescribed under Annual Inspection Fees; Provided, that for an inspection made outside of the District the fee shall be fifty dollars (\$50) per day or twenty-five dollars (\$25) for four (4) hours or less, with transportation and other necessary expenses.
- 201.13 Fee for welding qualification test shall be twenty-five (\$25).
- 201.14 The fee for certificate of competency for insurance company inspectors for each two (2) year period shall be ten dollars (\$10).
- 201.15 For the inspection of pipe or boiler welding the fee shall be fifty dollars (\$50) per day or twenty-five dollars (\$25) for four (4) hours or less. This fee shall be exclusive of the permit fee for the installation of a boiler.

202 PAYMENT OF FEES

- 202.1 Each fee shall be paid to the D.C. Treasurer, who shall issue a receipt for the payment.
- 202.2 Fees for the installation permit and subsequent inspection of a boiler or unfired pressure vessel shall be paid prior to the issuance of a permit and before any work is started.
- 202.3 Each fee for the inspection of boilers or unfired pressure vessels shall become due and payable immediately upon the making of the inspection and the certificate of inspection shall not be issued while there are any unpaid fees outstanding.
- 202.4 Fees erroneously charged by the District shall be refunded.
- 202.5 When a boiler installation or an unfired pressure vessel installation permit issued after August 14, 1954, and corresponding receipt(s), have been surrendered to the Central Permit Section, and cancelled, a refund of the permit fees shall be made as follows:
- (a) When no work has been done under authority of the permit the fee in excess of five dollars (\$5) shall be refunded;
 - (b) When work authorized by the permit has been only partially done and when the District is satisfied that no more work will be done under the permit, the fee in excess of the cost of preparing the permit and inspecting the work shall be refunded. The amount retained by the District shall be the cost of inspection plus five dollars (\$5), and the cost of inspection shall be determined by the Smoke and Boiler Section.
- 202.6 The refunds provided for under §202.5 shall only be made if the request for refund shall be made within six (6) months from the date of the issuance of the permit.
- 202.7 No permit fee shall be charged for the following work when supported by evidence indicating that the applicant is under contract or sub-contract to perform that work for the District:
- (a) Work done exclusively for the District; or
 - (b) Work done under contract for the District.

203 LOCATION AND CLEARANCES OF BOILERS

- 203.1 Each boiler shall be so located that adequate space for the proper operation of the boiler and its appurtenances, for the inspection of all surfaces, tubes, water walls economizers, piping valves, and other equipment, and for their necessary maintenance and repair, will be provided. Minimum clearances shall be as called for in the Fuel Burning Equipment Regulations.
- 203.2 Installation of equipment and construction of enclosure in buildings other than dwellings or flats shall comply with Article 8 of Chapter 11 of the 1961 D.C. Building Code.

204 REQUIREMENTS FOR POWER BOILERS

- 204.1 On the top of every power boiler setting, a steel platform reached by means of a stationary steel stairway or ladder shall be provided.
- 204.2 The platform shall be provided with a four inch (4") toe guard, a steel railing not less than thirty-six inches (36") inches in height, and shall have a runway made of steel grating not less than thirty inches (30") in width.
- 204.3 The stairway or ladder shall not be less than sixteen (16") inches in width and shall provide easy access to and from the platform.
- 204.4 Where there is more than one boiler or where otherwise necessary a second stairway or ladder remote from the other shall be provided.
- 204.5 Two unobstructed and accessible exits remote from each other shall be provided in every room housing power boilers of 75 horsepower total capacity and over and heating boilers leaving a total capacity of 2,400,000 B.T.U. and over.
- 204.6 Blow off pits, ash pits, alleyways, steam pipe tunnels, and other places where there would be danger of men being trapped shall have adequate ventilation, lighting, and a sufficient number of adequate means of egress.
- 204.7 Blow-off piping from power boilers shall not discharge directly into a sewer. A blow-off tank or sump shall be used where conditions do not provide an adequate and safe open discharge.
- 204.8 Blow-off tanks shall be designed for a least fifty percent (50%) of the working steam pressure of the boiler to which it is connected and shall be built in accordance with the Unfired Pressure Vessel Code.

204 REQUIREMENTS FOR POWER BOILERS (Continued)

- 204.9 They shall have a discharge connection at least six inches (6") above the maximum water level with a water seal, a vent from the top of the tank, and a cold-water connection to the top of the tank.
- 204.10 The vent shall be led to a safe point of discharge which shall be above the roof of the building of which it is a part or any adjoining building to which it may constitute a hazard or nuisance and shall be substantially supported and drained.
- 204.11 The design of each tank and piping shall be submitted to the Department for approval. Sizes shall not be less than indicated in Table 2-1.

205 INSTALLATION OF LOW PRESSURE HEATING BOILERS

- 205.1 The return water connection to every low pressure steam heating boiler shall be arranged to form what is known as the "Hartford Loop" so that the water cannot be forced out of the boiler below the safe water level.
- 205.2 This connection shall be installed on each boiler, as shown in Appendix I, with the inside bottom of the return pipe close nipple where it enters the equalizing loop being at the same level as the top of the bottom nut of the water gage glass.
- 205.3 Each boiler shall have a separate equalizer pipe installed between the bottom opening of the boiler and the boiler stop valve, when used.
- 205.4 When a stop valve is used in the return line of the loop it shall be located within 6 feet of the floor. A drain valve shall be provided at the lower point of the return line.
- 205.5 Galvanized pipe and fittings shall not be used in any part of the equalizer pipe or return.
- 205.6 The equalizer pipe shall not have a valve in it at any point and shall not be used as a means to connect two or more boilers together below the water line. Equalizer pipe sizes shall not be less than the schedules indicated in Table 2-2.
- 205.7 Each boiler shall be provided with a city water feed line which shall not discharge directly into any part of a boiler exposed to the direct radiant heat from the fire. It shall be connected into the equalizing line between the boiler and the condensate return connection and shall have a check valve in the line as close to the boiler as possible.

205 INSTALLATION OF LOW PRESSURE HEATING BOILERS (Continued)

- 205.8 The boiler feed line shall be adequate to take care of the maximum demand of the boiler.
- 205.9 All connections from the city water shut-off valve shall be of non-ferrous pipe with screwed fittings; tubing shall not be used.
- 205.10 A condensate return pump shall have capacity to supply the boiler or boilers with sufficient water to maintain a normal water level when the boilers are operating at maximum capacity. When more than one boiler is installed the condensate return line shall be arranged to supply all boilers equally.
- 205.11 A stop valve shall be installed in each supply and return connection of two or more boilers connected to a common system. When a stop valve is used in the supply pipe connection of a single boiler, there shall be one used in the return pipe connection or vice versa. If there are multiple branch connections each one shall be valved. When stop valves over two inches (2") in size are used they shall be of the outside screw-and-yoke type.
- 205.12 Stop valves shall be located as close to the boiler as possible and when over seven feet (7') above the floor shall be made accessible for operation by means of a permanent steel ladder and platform or by a chain or motor operated mechanism.
- 205.13 Each boiler shall have one or more blow-off connections fitted with straightway valves connected directly with the lowest water space. Plug or bibb cocks shall not be used. A discharge pipe shall be run to the floor full size with an ell at the bottom to direct the water away from the operator or to a blow-off tank. A tee fitting shall be used at the boiler in order to provide for cleaning the line. Blow-off valves shall not be smaller than the schedule indicated in Table 2-3.
- 205.14 If a surface blow down is used, it shall be run full size to the floor with an ell at the bottom or to a common drain.
- 205.15 All wash-out and hand-hold openings shall be accessible and shall not be obstructed or blocked by pipe or other obstacle. Capped pipe nipples and not plugs shall be installed in wash-out openings.
- 205.16 There shall be no cross connection below the water line for any purpose between two or more boilers.

206 BOILER CONTROLS

- 206.1 Every steam boiler, when mechanically fired, shall be provided with a steam limit control (pressure regulator) which shall operate to prevent the steam pressure from rising above the allowable working pressure of the boiler. All connections shall be on non-ferrous pipe with screwed fittings and there shall not be any valve between the boiler and the control.
- 206.2 When two or more boilers are connected to a common header, a master limit control connected into the main steam header shall be provided to control all boilers simultaneously.
- 206.3 Each steam boiler, when mechanically fired, shall be equipped with an approved low-water fuel cut-off, so located as to automatically cut off the fuel supply in case the water-gage glass; Provided, that this requirement shall not apply to gas-fired miniature boilers.
- 206.4 The operation of the low-water fuel cut-off shall not be dependent upon the functioning of another device.
- 206.5 When an oil burner is manually operated, the cut-off valve shall be located in the oil line close to the burner and shall have a manual re-set.
- 206.6 No valves shall be permitted between the low-water fuel cut-off and the boiler.
- 206.7 Each steam boiler shall have one or more water-gage glasses attached to the water column or directly to the boiler by means of valved fittings, with the lower fitting provided with a drain valve of the straightway type with opening not less than one quarter inch (1/4") diameter. The gage glass shall be visible from the operating floor and without the removal of any cover or casing. There shall be no obstruction to interfere with visibility of the gage glass.
- 206.8 When gage cocks or gage glass shut off cocks are located seventy-eight inches (78") or more above the operating floor, they shall be of the quick opening type with chains or rods attached for operation from the floor. The gage glass and pressure gage shall be illuminated by a light with an approved type of reflector so that they can be easily read.
- 206.9 An automatic water feeder shall be installed on each mechanically fired steam heating boiler. It shall have sufficient capacity to take care of the maximum boiler output.

206 BOILER CONTROLS (Continued)

- 206.10 A boiler feed pump, when used, shall have capacity to supply sufficient water to all boilers to maintain a normal water level when the boiler or boilers are operating at maximum capacity.
- 206.11 A valve city water by-pass, with the valves accessible from the floor, shall be installed around a feeder and shall have valved drain run to within 6 inches of the floor.
- 206.12 A water feeder shall be installed so that it will not maintain the water level above the normal operating level as specified by the manufacturer of the boiler.
- 206.13 On low-pressure steam heating boilers, the water gage glass shall be located so that the lowest permissible water level in the glass shall be as follows:
- (a) For multiple fire-tube boilers: At least one half inch (1/2") of water over the top row of tubes or the fusible plug, if used, whichever is higher.
 - (b) For package type Scotch Marine boilers: At least one half inch (1/2") of water over the top row of tubes or the fusible plug, if used, whichever is the higher.
 - (c) For fire-box, horizontal water tube boilers: At least one inch (1") of water over the highest point of the crown sheet.
 - (d) For any other type boiler: In accordance with manufacturers' recommendations.
- 206.14 Two or more boilers shall be arranged so that the low water line of all boilers is at the same level; Provided, that when each boiler is provided with an individual pump control and an automatically operated feed water control valve they may be approved for operation with different water levels.
- 206.15 Every boiler shall have a pressure gage connected to its steam space, or to its water column, or to its steam connection by means of a siphon or equivalent device exterior to the boiler and of sufficient capacity to keep the gage tube filled with water and so arranged that the gage cannot be shut off from the boiler except by a cock with tee or lever handle, placed in the pipe near the gage.
- 206.16 The handle of the cock for the pressure gage shall be parallel to the pipe in which it is located when the cock is open.

206 BOILER CONTROLS (Continued)

- 206.17 The scale on the dial of a gage on a low pressure boiler shall be graduated to not less than thirty (30) pounds in five (5) pound graduations. Connections to steam gage siphons shall be of non-ferrous pipe.
- 206.18 The gage shall be visible at all times without the removal of any cover or casing, and shall be of such size and so located as to be easily readable from the operating floor.
- 206.19 When two or more mechanically fired steam boilers are connected to the same system, each boiler shall have independent low-water fuel cut-offs, pressure controls, pressure gages and water feeders.
- 206.20 All of the connections for the water column, water feeder, low-water fuel cut-out and make up water line to the boiler, shall be of non-ferrous pipe and screwed fittings, with a cross at each right angle turn and with a check valve in the feed line as close to the boiler as possible. High pressure boilers shall have a valve between the boiler and the check valve.
- 206.21 Water column, water feeder and low-water fuel cut-out shall have separate full size straightway valve drains run to within six inches (6") from the floor or to a common visible drain, with the valves located to be conveniently accessible for operation. Plug cocks shall not be used.
- 206.22 Tubing shall not be permitted on boiler piping or fittings. All piping shall be firmly braced and supported.
- 206.23 Drains shall be located so that the discharge will not impinge on the boiler setting or electrical equipment.

207 SAFETY VALVES

- 207.1 Each steam boiler shall be provided with one or more safety valves of the spring-pop type and having side outlet discharge, adjusted and sealed to discharge at a pressure not to exceed fifteen (15) pounds.
- 207.2 Seals shall be attached in a manner to prevent the valve from being taken apart or re-set to relieve at a higher pressure without breaking the seal.

207 SAFETY VALVES (Continued)

- 207.3 Each valve shall have a substantial lever-lifting device which will positively lift the disk from its seat at least one-sixteenth inch (1/16") when there is no pressure on the boiler. Where the lever is more than seventy-eight inches (78") from the floor a flexible chain or cable operating over a pulley, shall be provided so that the valve can be tested.
- 207.4 Each steam safety valve shall bear the A.S.M.E. symbol to indicate that it complies with the requirements of the A.S.M.E. Boiler Code in regard to construction, testing and rating, and shall be plainly and permanently marked by the manufacturer in such a way that the marking will be readable when the valve is installed and will not be obliterated in service.
- 207.5 The marking shall include the following information:
- (a) The manufacturer's name;
 - (b) The type and catalog number;
 - (c) The pressure at which it is set to blow; and
 - (d) The capacity in pounds of steam per hour as certified by the National Board of Boiler and Pressure Vessel Inspectors.
- 207.6 The steam safety valve capacity for each steam boiler shall be such that with the fuel burning equipment installed and operating at maximum capacity, the pressure cannot rise more than five (5) psi above the maximum allowable working pressure of the boiler.
- 207.7 When operating conditions are changed, such as when there is no stamping a valve or it is not legible, or when a safety valve does not function properly, then a new safety valve or valves as required in this section shall be installed.
- 207.8 It shall be the responsibility of the contractor making the installation or the changes, to provide and install the necessary safety valves.
- 207.9 In case of dispute over the safety valve capacity or when, in judgment of the Inspector, it is considered advisable to test the capacity of the safety valves, an accumulation test shall be made by the contractor or owner in the presence of the Inspector.

207 SAFETY VALVES (Continued)

- 207.10 This test shall be made by closing off all other discharge outlets from the boiler and operating the fuel burning equipment at maximum capacity. The safety valves shall be sufficient to prevent the pressure from rising more than five (5) psi above the maximum allowable working pressure of the boiler. Provision shall be made for piping the steam discharge from the boiler room during the test.
- 207.11 The minimum capacity of the safety valve or valves in pounds of steam per hour shall be determined as follows:
- (a) For steel or cast iron boilers, multiply the square feet of heating surface, if available, by five (5) or use the maximum rating output of the boiler as given by the manufacturer, whichever is greater.
 - (b) If the fuel burning equipment installed will produce a greater out-put than the minimum specified in §207.11(a), the capacity of the safety valve or valves shall be based on the maximum output obtainable. In any event the requirements of §§207.6 through 207.10 shall be met.
- 207.12 Safety valves shall be connected to boilers with the spindle in a vertical position in any one of the following ways:
- (a) Either directly to a tapped or flanged opening in the boiler;
 - (b) To a fitting connected to the boiler by a close nipple;
 - (c) To a Y-base;
 - (d) To a valveless steam pipe between the adjacent boilers; or
 - (e) To a valveless header connecting steam outlets on the same boiler.
- 207.13 When a Y-base is used pursuant to 207.12(c), the inlet area shall not be less than the combined outlet areas.
- 207.14 There shall be sufficient clearance above and around safety valves so that they can be removed and replaced without dismantling. The identification plate shall be located so as to be readable.

207 SAFETY VALVES (Continued)

- 207.15 No shut-off or connection of any description shall be placed between a safety valve and the boiler, nor on the discharge pipe between such valve and the atmosphere. A safety valve shall not be connected to an internal pipe in the boiler. Tubing or galvanized pipe shall not be used between the valve and boiler.
- 207.16 A discharge pipe shall not be used on safety valves on low pressure except where a boiler is located in a restricted space or where the discharge from the valve might constitute a hazard to persons or to equipment. A discharge opening of a single valve or the aggregate area of all valves based on the nominal diameter of the discharge openings of the valves with which it connects.
- 207.17 The discharge pipe shall be fitted with an open drain to prevent water from lodging in the upper part of the valve or in the pipe. When an elbow is placed on a safety valve discharge pipe, it shall be located close to valve outlet. The pipe shall be supported so that no strain is placed on valve body. The discharge shall be arranged so there will be no danger of scalding attendants.
- 207.18 A safety valve shall not be installed to discharge inside the casing self-contained boiler.
- 207.19 The safety valve or valves of each high-pressure boiler shall be provided with a full size discharge pipe leading to a safe point of discharge which shall be above the roof of the building of which it is a part, or any adjoining building to which it may constitute a hazard or nuisance.
- 207.20 Any discharge pipe shall be braced and supported so that there is no weight or strain on the safety valve body. The area of the discharge pipe shall be equal to the area of all of the safety valves discharging into it and forty-five (45) degree turns, shall be used. Visible, non-valved drains shall be provided for that piping.
- 207.21 Boilers of twenty-five (25) horsepower or less shall not be required to have discharge pipes if the discharge from the safety valve will not constitute a hazard.
- 207.22 When two or more boilers which are allowed different pressures are connected to a common steam main, all safety valves shall be set at a pressure exceeding the lowest pressure allowed; Provided, that when two or more boilers which are allowed different pressures are connected to a common steam main and all safety valves are set at a pressure not exceeding the lowest pressure allowed, the boiler allowed the lowest pressure shall be protected by a safety valve or valves placed on the connecting pipe to the steam main.

207 SAFETY VALVES (Continued)

207.23 The area or combined area of the safety valve or valves placed on the connecting pipe to the steam main shall not be less than the area of the connecting pipe, except when the steam main is smaller than the connecting pipe the area of the safety valve or valves placed in the connecting pipe shall not be less than the area of the steam main. Each safety valve placed on the connecting pipe shall be set at the lowest allowable pressure of any of the boilers.

208 EXPLOSION DOORS

208.1 Each boiler burning fuel in suspended or gaseous form shall have one or more self-closing explosion doors located in the boiler setting and breeching as required.

208.2 Explosion doors, when located in the walls of the boiler setting within seven feet (7') of the firing floor or of any platform or walkway, shall be provided with substantial deflectors to divert the blast of exploding gas so that it will not constitute a hazard.

208.3 This section shall apply not only to new installations but existing installations, if changed to burn such fuel.

209 INSTALLATION OF MINIATURE BOILERS

209.1 The classification "miniature" shall apply to fired pressure vessels, fired and unfired boilers which do not exceed the following limits:

- (a) 16 inches inside diameter of shell;
- (b) 5 cu. ft. gross volume, exclusive of casing and insulation;
- (c) 20 square feet water heating surface; and
- (d) 100 pounds per square inch maximum allowable working pressure.

209.2 Where any one of the limits specified in §209.1 is exceeded, the rules for power boilers shall apply.

209 INSTALLATION OF MINIATURE BOILERS (Continued)

- 209.3 Each boiler shall be located so that adequate space will be provided for the proper operation of the boiler and appurtenances and for the inspection of all surfaces and their necessary maintenance and repair.
- 209.4 Each boiler shall have the following minimum clearances:
- (a) At least eighteen inches (18") on all sides;
 - (b) At least three feet (3') clearance from electric meters and main-line switches; and
 - (c) At least eighteen inches (18") clearance from all other switches and fuse boxes.
- 209.5 A boiler shall not be located closer than seven feet (7') horizontally from any gas meter.
- 209.6 Each boiler operating at a pressure in excess of twenty-five (25) pounds per square inch shall be provided with at least one feed pump or other approved feeding device except where the steam generator is operated with no extraction of steam (closed system).
- 209.7 Each boiler shall be provided with a blow-off connection which shall not be reduced in size and shall be led to a safe point of discharge. Whenever, in the judgment of the boiler inspector a safe place of discharge cannot be provided, a blow-down tank shall be installed, and a one inch (1") vent leading to a safe point of discharge shall be provided on each of those tanks. The blow-off shall be fitted with a valve or cock in direct connection with the lowest water space practicable.
- 209.8 All boilers mechanically fired other than by gas shall be provided with an automatic low-water fuel cut-out so located as to automatically cut off the fuel supply in case the water level falls to a point not lower than the bottom of the water glass.
- 209.9 Where boilers are gas-fired, the burners used shall conform to the requirements of the American Gas Association. The burner shall be equipped with a fuel-regulating governor which shall be automatic and regulated by the steam pressure. This governor shall be so constructed that in the event of its failure, there shall be no possibility of steam from the boiler entering the gas chamber or supply pipe. A manual stop or throttle valve shall be located in the inlet pipe ahead of the fuel-regulating governor. All requirements of the District Gas Fitting Regulations shall be satisfied.

209 INSTALLATION OF MINIATURE BOILERS (Continued)

- 209.10 Each gas-fired boiler shall be connected to a four inch (4") vent or flue, or to a chimney, extended to an approved location outside of building, all to be of approved design. Where the horizontal run is more than ten feet (10'), the vent shall be increased to six inches (6") inches.

210 INSTALLATION OF UNFIRED PRESSURE VESSELS

- 210.1 Each unfired pressure vessel shall be installed so that it is available for complete external inspection of shell and heads and shall be located so that wherever possible, there will be not less than 12 inches between any floor, wall, ceiling, or other obstruction. There shall be no piping or other obstructions to prevent proper access; any manhole or inspection opening shall be located so that it is readily accessible.
- 210.2 All stamping and longitudinal welded or riveted joints shall be located in a position as to be readily visible to the inspector. Where necessary to install a vessel underground, it shall be enclosed in a concrete or brick pit with a removable cover so that inspection of the entire shell and heads of the vessel can be made.
- 210.3 Each unfired pressure vessel shall be supported by masonry or structural supports of sufficient strength and rigidity to safely support the vessel and its contents. There shall be no vibration in either the vessel or its connecting piping.
- 210.4 All piping and connections to an unfired pressure vessel shall be supported in a substantial and safe manner so that there is no strain placed upon the vessel. Provision shall be made for expansion, contraction, and drainage.
- 210.5 Each unfired pressure vessel shall be painted with two coats of approved paint, so that it is protected from rust or corrosion. It shall not be in contact with any corrosive material or moisture.
- 210.6 Each unfired pressure vessel shall have bottom drip pipe fitted with a valve or cock in direct connection with the lowest space practicable. The minimum size of pipe and fittings shall be three-quarters of an inch (3/4") except for tanks twenty inches (20") in diameter or less in which the minimum of the pipe and fitting shall be one-quarter inch (1/4"). If a plug cock is used, the plug shall be held in place with a guard or gland. Globe valves and cocks shall not be used.

210 INSTALLATION OF UNFIRED PRESSURE VESSELS (Continued)

210.7 Each unfired pressure vessel shall have a pressure gage connected in a manner that the gage cannot be shut off from the vessel, except by a cock with a T or lever handle which shall be placed on the pipe near the gage. Connections to gages shall be placed on the pipe near the gage. Connections to gages shall be made of non-ferrous pipe and fittings from the tank to the gage. Tubing shall not be used. The dial of the gage shall be graduated to not less than one and one-half times the maximum pressures allowed for the vessel. A one-quarter inch (1/4") test gage connection shall be provided for attaching the inspector's test gage.

211 SAFETY VALVES FOR UNFIRED PRESSURE VESSELS

211.1 Each unfired pressure vessel shall be protected by safety and relief valves and indicating and controlling devices to insure its safe operation. These valves and devices shall be so constructed, located, and installed that they cannot readily be rendered inoperative.

211.2 The relieving capacity of safety valves shall be such as to prevent a rise of pressure in the vessel of more than 10 percent above the maximum allowable working pressure, taking into account the effect of static head. Safety valve discharge shall be carried to a safe place.

211.3 Each safety valve shall be of the direct spring-loaded type having a substantial lever-lifting device so that the disk can be lifted from its seat by the spindle not less than one-eighth (1/8th) the diameter of the valve when the pressure of the vessel is seventy-five per cent (75%) of that at which the safety valve is set to blow.

211.4 Every such valve shall be marked "A.S.M.E. or National Board Standard," and shall give the following information:

- (a) The name or identifying mark of the manufacturer;
- (b) The pipe size of valve inlet;
- (c) The pressures of which the valve is set to blow; and
- (d) The relieving capacity.

211.5 Safety valves having either the seat or disk of cast iron shall not be used.

211 SAFETY VALVES FOR UNFIRED PRESSURE VESSELS (Continued)

- 211.6 If more than one safety valve is used, the discharge capacity shall be taken as the combined capacity of all valves.
- 211.7 For vessels in which pressure is not generated but is derived from an outside source, each safety valve shall be so connected to the vessel, vessels, or system which it protects as to prevent a rise in pressures beyond the maximum allowable pressure in any vessel protected by the safety valve.
- 211.8 For vessels in which pressure may be generated, the safety valve or valves shall be connected directly to the vessel which is to be protected or to a pipe line leading to the vessel. The internal cross-sectional area of the pipe line shall be not less than the nominal area of the safety valve or valves used, and without any intervening valve between the vessel and the safety valve or valves protecting it.
- 211.9 Each vessel, the contents of which are likely to cause interference with the operation of a safety valve if attached directly to the vessel, shall have the safety valve or valves connected in a manner as to avoid that interference.
- 211.10 When an escape pipe is used, it shall be full-sized and fitted with an open drain to prevent liquid from lodging in the upper part of the safety valve, and no valve of any description shall be placed on the escape pipe between the safety valve and the atmosphere.
- 211.11 When an elbow is placed on an escape pipe, it shall be located close to the safety valve outlet or the escape pipe shall be securely anchored and supported. When two or more safety valves are placed on one connection, this connection shall have a cross-sectional area at least equal to the combined area of these safety valves.
- 211.12 Each safety valve which is exposed to a temperature of thirty-two (32) degree F. or less shall have a drain at least three-eighths inch (3/8") in diameter at the lowest point where water can collect; Provided, that safety valves three-quarters inch (3/4") in size and less may have drain holes as large as possible but not less than three-eighths inch (3/8") diameter.
- 211.13 Safety-valve springs shall not be adjusted to carry more than ten (10) percent greater pressure than that for which the springs were made.
- 211.14 Each safety valve shall be tested once every day or oftener by raising the disk from its seat.

211 SAFETY VALVES FOR UNFIRED PRESSURE VESSELS (Continued)

- 211.15 Safety valves for compressed air tanks shall not exceed three inches (3") in diameter and shall be proportioned for the maximum number of cubic feet of free air that can be supplied per minute as shown in table U-1.
- 211.16 Rupture disks or heads may be used for additional protection of pressure vessels but they shall be designed to fail at a pressure above the safety or relief valve setting.
- 211.17 When two or more unfired pressure vessels which are allowed different pressures are connected to a common source of pressure, all safety valves shall be set at pressure not exceeding the lowest pressure allowed.

212 PENALTY

- 212.1 Any person who violates or fails to comply with any one or more of the provisions of the Boiler Inspection Act, approved June 25, 1936, or of this chapter, shall upon conviction thereof in the police court of the District of Columbia, on information filed by the Corporation Counsel or any of his assistants be subject to a fine of not to exceed \$100 or to imprisonment for not more than 90 days, or both, for each and every violation thereof and each violation shall constitute a separate offense.-

TABLE 2-1
REQUIREMENTS FOR POWER BOILERS (see §204)

Boiler Rating	Size tank	Outlet Inches	Vent Inches
2 to 25 horsepower	24in. diameter by 36in. deep	2	2
26 to 75 horsepower	30in. diameter by 48in. deep	3	3
76 to 150 horsepower	36in. diameter by 54in. deep	5	4
151 to 250 horsepower	36in. diameter by 60in. deep	5	5
251 to 600 horsepower	42in. diameter by 66in. deep	5	6
601 to 1,000 horsepower	48in. diameter by 72in. deep	6	6

TABLE 2-2
EQUALIZER PIPE SIZES (see §205.6)

Grate Area Square Feet	S.V.R.C. Pounds per hour	Size Pipe Inches
Under 4	250 or less	1 1/2
4 to 15	251 or 2000	2 1/2
Over 15	2001 or over	4

*Note: Safety Valve Relieving Capacity for this purpose shall be the capacity as stamped on a steel boiler or on the name plate of a cast iron boiler.

TABLE 2-3
BLOW-OFF VALVES (see §205.13)

Boiler Rating Square Feet E.D.R.	Pipe Size Inches
Under 1000	3/4
1001 to 3500	1
3501 to 8500	1 1/2
8501 to over	2

